

AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remains under examination in the application are presented below. The claims are presented in ascending order and each includes one status identifier. Those claims not cancelled or withdrawn but amended by the current amendment utilize the following notations for amendment: 1. deleted matter is shown by strikethrough for six or more characters and double brackets for five or less characters; and 2. added matter is shown by underlining.

1. (Canceled).

2. (Canceled).

3. (Currently Amended) An apparatus for measuring a carbon concentration in an atmosphere having a reduced pressure comprising:

a carbon concentration measuring body insertion port communicating between an external portion of a furnace shell of a heat treatment furnace and a treating room within the furnace shell,

means for exhausting an internal portion of the port,

means for maintaining a vacuum seal of a portion of the port outside of the furnace shell,

means for transferring a carbon concentration measuring body from the external portion of the furnace shell into the treating room, and

means for measuring an amount of carbon in the carbon concentration measuring body,

wherein the means for maintaining a vacuum seal further comprise means for fastening and holding the carbon concentration measuring body transferring means.

4. (Original) The apparatus for measuring a carbon concentration as claimed in claim 3, wherein the carbon concentration measuring body is a carbon concentration measuring steel wire.

5. (Original) The apparatus for measuring a carbon concentration as claimed in claim 3, wherein the carbon concentration measuring body is a carbon concentration measuring steel foil.

6. (Original) The apparatus for measuring a carbon concentration as claimed in claim 3, wherein the carbon concentration measuring body is a test piece of a subject to be carburized.

7. (Canceled)

8. (Currently Amended) A method of measuring a carbon concentration in an atmosphere having a reduced pressure comprising the steps of:

exhausting an internal portion of a carbon concentration measuring body insertion port communicating between an external portion of a furnace shell of a heat treatment furnace and a treating room within the furnace shell,

transferring a carbon concentration measuring body from a portion of the port outside of the furnace shell into the treating room using means for maintaining a vacuum seal of a portion of the port outside of the furnace shell and for fastening and holding the carbon concentration measuring body,

reacting the carbon concentration measuring body with the atmosphere in the treating room for a predetermined time,

drawing out the carbon concentration measuring body to a space portion between the furnace shell and a heat insulating layer;

~~gradually cooling the carbon concentration measuring body for a predetermined time,~~  
drawing out the carbon concentration measuring body to the portion of the port outside of the furnace shell, cooling the carbon concentration measuring body to [[a]] room temperature, and  
measuring an amount of carbon in the carbon concentration measuring body in [[the]] atmosphere pressure.

9. (Original) The method as claimed in claim 8, wherein the carbon concentration measuring body is a carbon concentration measuring steel wire.

10. (Original) The method as claimed in claim 8, wherein the carbon concentration measuring body is a carbon concentration measuring steel foil.

11. (Original) The method as claimed in claim 8, wherein the carbon concentration measuring body is a test piece of a subject to be carburized.